

No. 646,367

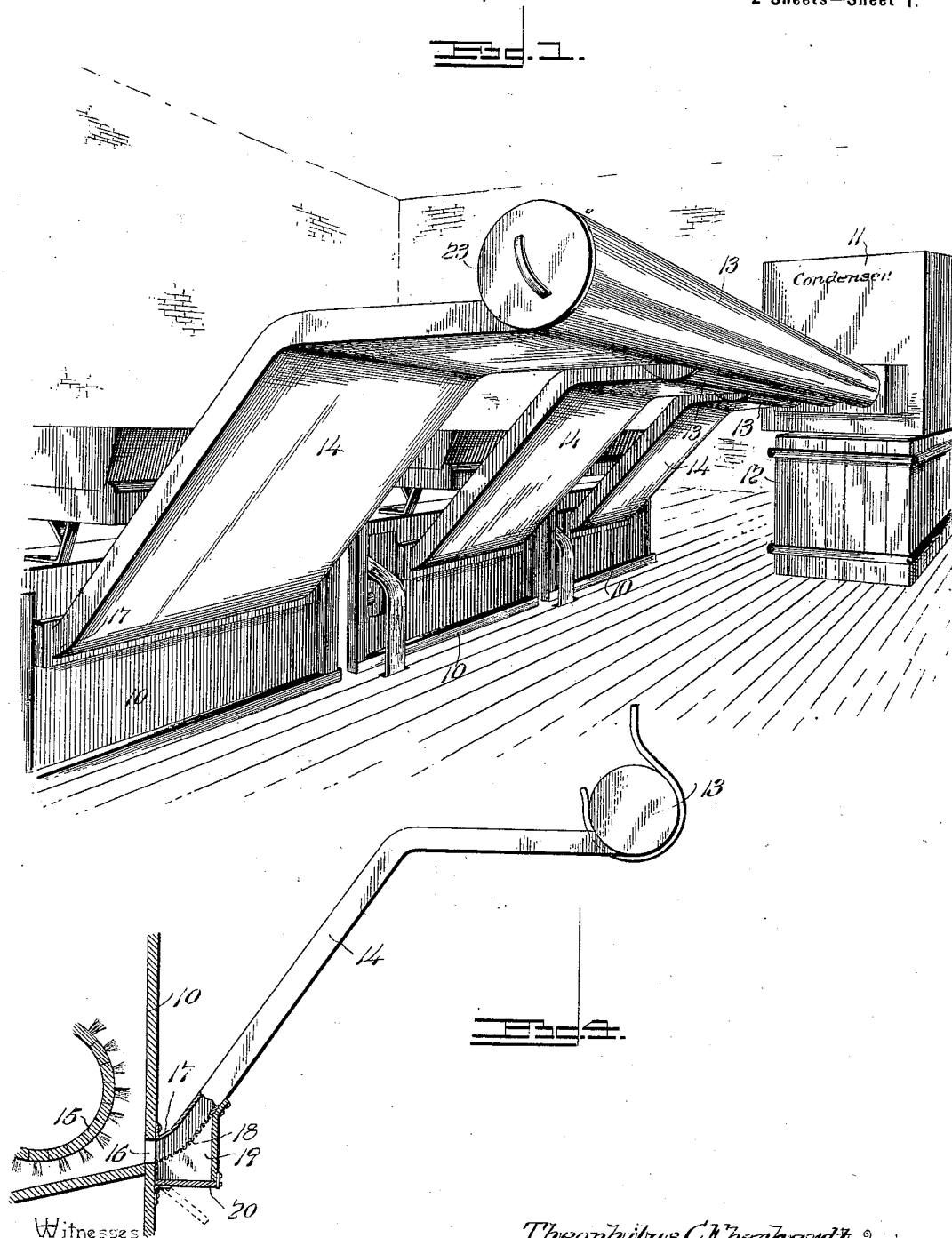
Patented Mar. 27, 1900.

T. C. EBERHARDT.
FLUE SYSTEM FOR COTTON GINS.

(Application filed Jan. 4, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
E. J. Stewart
H. J. Beaulieu

Theophilus C. Eberhardt Inventor
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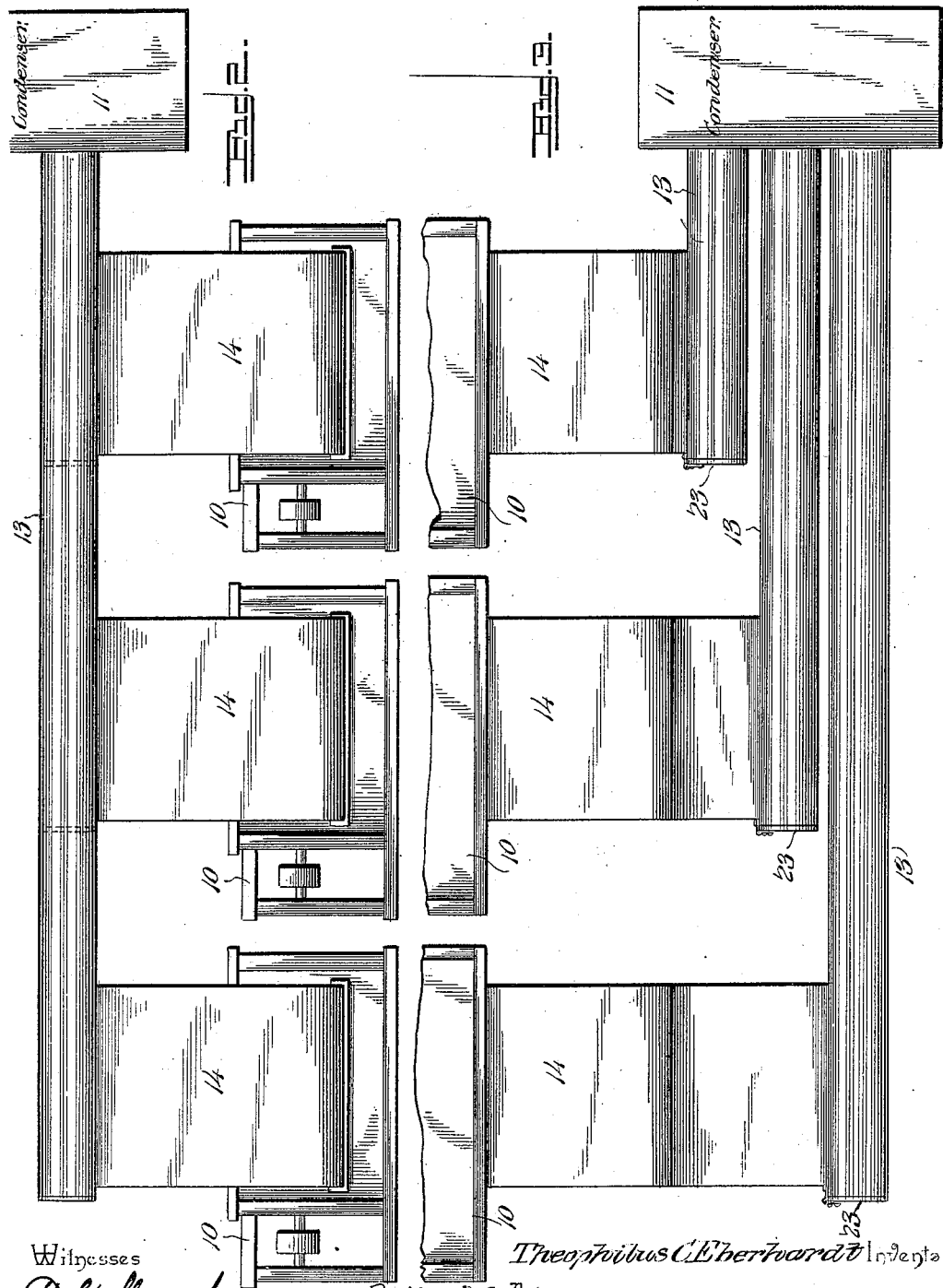
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UNITED STATES PATENT OFFICE.

THEOPHILUS C. EBERHARDT, OF PRATTVILLE, ALABAMA.

FLUE SYSTEM FOR COTTON-GINS.

SPECIFICATION forming part of Letters Patent No. 646,367, dated March 27, 1900.

Application filed January 4, 1899. Serial No. 701,147. (No model.)

To all whom it may concern:

Be it known that I, THEOPHILUS C. EBERHARDT, a citizen of the United States, residing at Prattville, in the county of Autauga and State of Alabama, have invented a new and useful Flue System for Cotton-Gins, of which the following is a specification.

My invention relates to improvements in the lint-flue hood used in connection with the lint-discharge opening of a cotton-gin of the ordinary type and with the main lint-flues used in conveying lint-cotton to the condenser, also of the ordinary type, especially when said condenser is placed a considerable distance from the gin stand or stands and above the horizontal plane of the gin-stand, either on the right or left of its discharge-opening, as becomes necessary in arranging gins relative to the condenser when connected in "system ginning."

One object of the invention is to provide a lint-flue hood adapted to be used in connecting an ordinary gin with a main lint-conveying flue arranged on the horizontal plane above the gin-stand, said lint-flue hood being arranged in such relation to the cotton-gin as to immediately elevate the lint-cotton to the horizontal plane of the lint-receiving opening of the condenser.

A further object of the invention is to provide a lint-flue hood in which the cotton can be cleaned of sand and dirt immediately after it leaves the gin-stand and prior to its delivery into the main lint-flue, thus obviating the many serious objections of having the dirt and lint thrown together in the main lint-flue. Heretofore it has been customary to connect cotton-gins with the main lint-conveying flues by means of a lint-flue hood which was inclined upward but slightly and without the special object of lifting the cotton at once to the proper height of the lint-receiving opening of the condenser, thus making it necessary to curve the main lint-flue upward at some distant point beyond the gin-stands in order that the cotton might be lifted to the proper height necessary for entering the condenser. This upwardly-curved construction of the main lint-flue offers serious objections, for the reason that the air-current after having traveled a considerable distance in the lint-flue becomes weakened

and retarded, and therefore said current will drop cotton, sand, and dirt in the main lint-flue at the point of upward curvature thereof, thus continuously forming an obstruction to the passage of the lint-cotton to the condenser. I am also aware that perforated bottoms have been used in certain parts of the lint-flues of ordinary gins leading to the condenser; but these have not either such construction as to constitute a part of the gin-stand proper or they have been placed at such points in the lint-flues as would not fully accomplish the desired result. With a lint-flue hood of my improved construction these serious objections are entirely overcome, from the fact that the cotton is lifted at once at the point where the air-current created by the gin-brushes is the strongest, so that the lint-cotton is elevated immediately after it leaves the lint-discharge opening of the gin to the proper height for entrance to the condenser on the horizontal plane of the lint-opening therein; and, furthermore, my lint-flue hood is provided with a cleaning-screen which enables said hood to be used in connecting any kind of a gin-stand with the main lint-discharge flue or flues without requiring any alteration in the gins themselves.

With these ends in view the invention consists in the novel construction and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated a preferred embodiment thereof in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view illustrating my flue system in operative relation to a condenser and a battery of gin-stands. Fig. 2 is an elevation of the system represented by Fig. 1, looking at the rear sides of the gin-stands. Fig. 3 is a plan view of the system represented by Figs. 1 and 2, with the gin-stands partly broken away. Fig. 4 is a detail sectional elevation illustrating a fragment of one gin and showing the main condenser-flue and the lint-discharge hood.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

In order that others may understand my

invention, I have illustrated the same in connection with a battery or series of gin-stands, which are indicated by the numeral 10, a condenser, (indicated at 11,) and a press 12, all as more clearly shown by the perspective view, Fig. 1.. It will be understood that these elements are ordinary in the art and that each element may be of any approved construction.

In the preferred embodiment of my invention each gin-stand 10 is connected through a lint-discharge hood with a main condenser-flue 13, and thus each gin of the battery or series is connected individually by a condenser-flue 13 with the condenser 11 in a manner similar to the "rear parallel flue" system familiar to those skilled in the art and which is represented diagrammatically by Fig. 3 of the drawings. I do not wish it to be understood, however, that my invention is strictly limited to the employment of the series of condenser-flues arranged parallel to each other in rear of the gin-stands and serving to individually connect the battery of gin-stands with the condenser, because I am aware that the battery of gins may be connected operatively with the condenser by a flue which is in active communication with and is common to each of the gin-stands which constitute the battery or series of gins.

The condenser-flue is arranged in a horizontal position at a suitable distance above the floor, and it is supported in said position by any suitable means—such, for example, as hanger-rods or suspension devices. The particular means employed for supporting the condenser-flue in its elevated position above the horizontal plane of the gin-stand, in rear of the gin and parallel thereto, may be varied within the province of a skilled mechanic, and I do not, therefore, deem it essential to particularly describe or illustrate one embodiment of means for attaining this purpose.

The arrangement of the main condenser-flue in the elevated or suspended condition described necessitates the employment of a lint-discharge hood which is arranged, essentially, in an upwardly-inclined direction from the gin-stand, and this upwardly-inclined lint-discharge hood is connected at its lower end to the lint-discharge opening of the gin-stand in any suitable or approved manner, while its other upper end is connected with the condenser-flue in the manner indicated more clearly by Fig. 4. This lint-discharge hood is arranged to extend the full length of the gin-stand in the ordinary manner to receive the lint-cotton from the high-speed revoluble brush 15 of the gin. As shown by Fig. 4, the lower end or foot of the upwardly-inclined hood 14 is provided with a flange which surrounds the lint-discharge opening 16 of the gin-stand, and this flanged foot of the hood is secured firmly to the gin-stand by means of bolts or screws, although it is evident that the detailed construction of the joint between the stand and the hood may be

modified within wide limits. The lint-discharge hood 14 is elbow-shaped, with the horizontal leg of the hood coupled to the condenser-flue and the inclined leg thereof united with the gin-stand. The lower end or foot of the inclined leg forming a part of the lint-discharge hood is curved, as at 17, and this curved section of the inclined leg of the hood is united directly to the gin-stand in the manner described. In the lower side of the curved foot forming a part of the lint-discharge hood is provided a screen 18, which may consist of perforated sheet metal, wire fabric, or any other suitable foraminous material. The curved or segmental screen in the lower side of the curved foot lies in the horizontal plane of the gin-brush 15, and the lint-cotton which is thrown from the brush is adapted to pass through the opening 16 and impinge directly against the screen 18. This is an important feature of my flue system, for the reason that the sand and dirt which is contained in the lint-cotton is separated at the curved lower end or foot of the lint-discharge hood by the centrifugal action of the blast from the revoluble gin-brush, and thus the sand and dirt are eliminated by passing through the screen, while the lint-cotton is caught by the screen and is carried through the inclined hood by the draft and feeding action of the gin-brush.

I attach especial importance to the arrangement of the condenser-flue in an elevated position in a horizontal plane above the gin-stands and to the lint discharge hood inclining upwardly from the gin-stand to the elevated condenser-flue. This relative arrangement of the elements possesses twofold advantages: First, the condenser-flue lies wholly out of the way of the operatives, who are able to gain access to the rear side of the gin-stand for the purpose of cleaning and oiling the working elements of the gin, and the floor-space of the gin room or house is available for other purposes; and, secondly, the lint-discharge hood is connected directly to the stand for the purpose of utilizing the full energy of the blast from the gin-brush for the elevation of the lint-cotton from the gin-stand to the condenser-flue. This last-recited consideration is an exceedingly important feature, for the reason that the elevation of the lint-cotton to the horizontal plane of the condenser-flue is effected immediately after the lint-cotton emerges from the discharge-opening of the gin, and hence the energy of the blast from the gin-brush is availed of to the fullest possible extent to carry the lint-cotton into the condenser-flue, by which it is conveyed to the condenser.

In my system the sand and dirt are eliminated from the lint-cotton to a great extent directly after the cotton emerges from the gin and before it passes into the condenser-flue, and in order to maintain the draft through the upwardly-inclined hood and the condenser-flue a sand-receptacle 19 is arranged

around the screen 18 and is joined with the hood in an air-tight manner. This sand box or receptacle 19 extends longitudinally with the gin-stand and the hood and around the screen 18, and the sand which passes through the screen is free to collect and accumulate in the box or receptacle. Any suitable means may be provided for obtaining access to the chamber of the box or receptacle for the purpose of removing the sand therefrom at desired periods; but in Fig. 4 of the drawings I have represented the sand-box as having a hinged bottom 20, which may be dropped down to the position indicated by dotted lines for the purpose of emptying the sand which accumulates therein.

The condenser-flue which I employ is free from the upwardly-inclined section or elbow universally employed in rear parallel flue systems for cotton-gins, thereby obviating the lodgment and accumulation of sand in the elbow of the condenser-flue. The lint-cotton which is delivered from the gin-stand to the hood and thence to the condenser-flue travels through the condenser-flue in a horizontal path instead of being compelled to traverse an upwardly-inclined length or elbow of the condenser-flue.

The condenser-flue for each gin-stand may be of any desired shape in cross-section—that is to say, it may be square, rectangular, or curved in cross-section; but for a reason which will presently appear I prefer to make the condenser-flue of circular form in cross-section, as represented by Figs. 1 and 4 of the drawings. When a condenser-flue square or angular in cross-section is employed, I may lead or connect the lint-discharge hood in a position radially to the axis of the condenser-flue; but practical experience has shown that the radial arrangement of the lint-discharge hood to the condenser-flue delivers the lint-cotton above the bottom of the flue and in a position for the blast and the cotton to impinge against the opposite side or wall of the flue from that side in which the blast and lint-cotton enter the flue, thus causing the sand which may remain in the lint-cotton to drop on the bottom of the condenser-flue, which results in accumulation of sand in said condenser-flue and which might have a tendency to eventually clog and choke the flue. To overcome these objections, I employ a condenser-flue which is curved in cross-section and preferably of the circular form shown by the drawings, and the lint-discharge hood is arranged tangentially to this condenser-flue and at the bottom thereof in order to utilize the curved surface or contour of the flue as a deflector for the purpose of directing the strata of lint-cotton with a gyratory motion through the condenser-flue. The gyratory motion imparted to the lint-cotton by delivering the same tangentially to the curved condenser-flue and which lint-cotton is propelled through the flue by the blast and feeding action of the gin-brush

causes the cotton as it traverses the condenser-flue to scour the interior surface of the flue and to effectually carry the same along the flue to the condenser, where the sand is eliminated from the lint-cotton, thereby preventing the sand from being deposited on the bottom of the flue, so that it will not ultimately obstruct or choke up the flue. It will thus be seen that my system contemplates the provision of means and the adaptation of elements by which the sand is eliminated to a great extent from the lint-cotton before it passes to the condenser-flue, and any sand which may have a tendency to lodge in the condenser-flue is effectually carried by the cotton to the condenser for elimination from the cotton by the condenser-screen, whereby one of the serious objections to the rear-flue system between the cotton-gins and the condenser is wholly overcome.

My lint-flue hood may be made of any suitable material, and it is made in sizes to fit over the lint-discharge opening of the gin with which a hood is to be used. At the lower end of the lint-flue hood, where it is attached to the gin-stand, said hood is immediately curved upward and extended in its upward course to the horizontal plane of the lint-receiving opening in the condenser, and at this point the lint-flue hood is by a suitable curve or elbow made to enter the main lint-flue on the horizontal plane of the condenser-opening, said lint-flue leading directly to the condenser. To thoroughly clean the lint-cotton before entering the main flue and as said lint-cotton is discharged from the gin-stand, my lint-flue hood is provided at its lower curved portion with a perforated bottom or screen, through which the sand or dirt will be thrown into a suitable receptacle, while the lint-cotton will pass in an upward course through the lint-flue hood and thence directly into the main lint-flue, the lint-cotton continuing in a straight course to the condenser. It is evident that the air-current from the brush of the gin is stronger at the lint-discharge opening of the gin, and this current will therefore more thoroughly and efficiently elevate the lint-cotton at the point where it is discharged from the gin-stand than it would if the elevating-point of the lint-cotton were located at some distance from the gin-stand, because the air-current has a tendency to become weakened by the friction due to the sides of the flue.

The employment of a straight horizontal condenser-flue enables me to extend the flue or pipe indefinitely for coupling the same to a condenser which may be located remote from the gins, and this extension of the straight pipe may easily be effected without special construction of the condenser-flue, as is required in the ordinary rear parallel flue system.

It is not strictly necessary to employ a condenser-flue which is straight throughout its length, although it is desirable so to do, nor

is it essential that the condenser-flue shall be circular in cross-section, because it is evident that the condenser-flue may be slightly deflected from a straight line and that the flue
5 may be curved in cross-section to secure the deflection of the lint-cotton when it is delivered to the flue from the lint-discharge hood.

Although I have shown and described my system as embracing a battery of gins, with
10 their complemental lint-discharge hoods and condenser-flues, it is evident that a single gin, condenser-flue, and lint-discharge hood may be employed.

As shown by Fig. 1, the condenser-flue is
15 equipped with a removable head 23 at the opposite end from its union with the condenser. This head should be fitted tightly but removably to the condenser-flue in order to maintain the blast through the flue for the
20 conveyance of lint-cotton and to permit access to the interior of the flue.

Changes may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of
25 the invention embodied. Hence I do not de-

sire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

In a lint-flue system, the combination with a gin, and a condenser-flue, of the elbow-shaped lint-flue hood, 14, having the inclined and horizontal members forming an unbroken lint-passage from the gin to said condenser-flue, the inclined member of said hood provided with a curved flanged foot which is coupled to the gin-stand, a curved screen, 18, in the lower side of said foot of the hood, and a box inclosing said screen, the screen and box being located exteriorly of the gin-stand, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

THEOPHILUS C. EBERHARDT.

Witnesses:

JOHN H. SIGGERS,
HAROLD H. SIMS.